

Curriculum Vitae

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CLAUDIO MAZZOLENI Ph.D.

Postdoctoral Fellow

Los Alamos National Laboratory

ISR-2 Mail Stop D436

Los Alamos, NM 87545 USA

E-mail: Claudio@lanl.gov

Phone: 001-505-665-9237

Summary of Qualifications:

- 4 years of laboratory experience with optical spectroscopy instruments for solid-state materials investigation.
- 5 years of research experience in atmospheric sciences and vehicles particulate emissions measurement.

Educational Background:

- **2003 Ph.D.** Atmospheric Sciences, Desert Research Institute, Reno, University of Nevada System. GPA: 3.79/4.0, Dissertation title: “On-Road Particulate Emission Measurements”
- **1995 Laurea** in Physics, University of Trento, Italy. Score 108/110, Thesis title: “Realization and applications of porous silicon multilayer”.

Employment Scientific Experiences:

- **June 2005 - present:** Post-Doc Fellow, Los Alamos National Laboratory, NM
- **2003 – June 2005:** Post-doc Research Associate, Desert Research Institute, Reno, NV.
- **1999 - 2003:** Graduate research assistant, Desert Research Institute, Reno, NV, Atmospheric Sciences program.
- **1998 – 1999:** Technical laboratory supervisor, Ultrafast Spectroscopy Laboratory, Department of Physics of the University of Trento, Italy.
- **1997 – 1998:** Research fellowship for the study of non-crystalline materials for optoelectronic, Department of Physics of Trento, Italy.

Academic and Professional Interests:

- Climate research, air pollution and aerosols measurements, remote sensing, optoelectronics, teaching and supervise students.

Professional Affiliations:

- Member of Air and Waste Management Association.
- Member of American Meteorological Association.
- Member of American Geophysical Union.

Publications:

In preparation:

- 1) M.-C. O. Chang, J. G. Watson, D. Zhu, N. J. Nussbaum, H. D. Kuhns, J. C. Chow, H. Moosmüller, C. *Mazzoleni*, W. Miller, D. Cocker, T. Durbin, and K. Johnson “**Field Validation of In-Plume System with Dilution Sampling Method**”
- 2) N. J. Nussbaum, D. Zhu, H. D. Kuhns, M.-C. O. Chang, J. C. Chow, H. Moosmüller, C. *Mazzoleni*, and J. G. Watson “**In-Plume System for the Measurement of Combustion Emission Factors: System Configuration and Characterization**”

Submitted:

- 1) C. *Mazzoleni*, H. D. Kuhns, J. Witt, N. J. Nussbaum, H. Moosmüller, M.-C. O. Chang, G. Parthasarathy, S. K. K. Nathagoundenpalayam, D. Nikolic, and J. G. Watson “**A Real-World Case Study of Tailpipe Emissions for School Buses Using a 20% Biodiesel Blend**”, submitted to Environmental Science and Technology (October 2005).

Published:

- 1) C. *Mazzoleni*, H. Moosmüller, H. D. Kuhns, R. E. Keislar, P. W. Barber, D. Nikolic, N. J. Nussbaum, and J. G. Watson “**Correlation between Automotive CO, HC, NO, and PM Emission Factors from On-Road Remote Sensing: Implications for Inspection and Maintenance Programs**”, Transportation Research, Part D, 9, 477-496 (2004).
- 2) P. W. Barber, H. Moosmüller, R. E. Keislar, H. D. Kuhns, C. *Mazzoleni*, and J. G. Watson “**On-Road Measurement of Automotive Particle Emissions by Ultraviolet Lidar and Transmissometer: Theory**”, Measurement Science and Technology, 15, 2295-2302 (2004).
- 3) C. *Mazzoleni*, H. D. Kuhns, H. Moosmüller, R. E. Keislar, P. W. Barber, N. F. Robinson, D. Nikolic, and J. G. Watson “**On-Road Vehicle Particulate Matter and Gaseous Emission Distributions in Las Vegas, NV and Comparison with other Areas**”, Journal of the Air and Waste Management Association, 54, 711-726 (2004).
- 4) H. D. Kuhns, C. *Mazzoleni*, Hans Moosmüller, Djordje Nikolic, Robert E. Keislar, Peter W. Barber, Zheng Li, Vicken Etyemezian, John G. Watson “**Remote sensing of PM, NO, CO, and HC emission factors for on-road gasoline and diesel engine vehicles in Las Vegas, NV**”, Science of the Total Environment, 322 (1-3) 123-137 (2004).
- 5) H. Moosmüller, C. *Mazzoleni*, P. W. Barber, H. D. Kuhns, R. E. Keislar, and J. G. Watson “**On-Road Measurement of Automotive Particle Emissions by Ultraviolet Lidar and Transmissometer: Instrument**”, Environmental Science and Technology, 37, 4971-4978, (2003).
- 6) L. Pavesi, L. Dal Negro, M. Cazzanelli, C. *Mazzoleni*, Z. Gaburro, F. Priolo, G. Franzò, D. Pacifici, A. Irrera, F. Iacona, “**Towards a silicon laser**”, Highlights INFM (Italian National Institute for the Physics of the Matter) (2000/2001).
- 7) L. Pavesi, L. Dal Negro, C. *Mazzoleni*, G. Franzó, and F. Priolo “**Optical gain in silicon nanocrystals**”, Nature, Vol. 408 23, pp. 440-444, November (2000).

- 8) S. K. Lazarouk, A. A. Leshok, V. E. Borisenko, *C. Mazzoleni*, and L. Pavesi “**On the route towards Si-based optical interconnects**”, Microelectronic Engineering, Vol.50, No.1-4, 81-6 (2000).
- 9) F. Giorgis, P. Mandracci, L. Dal Negro, *C. Mazzoleni*, and L. Pavesi “**Optical and luminescence analysis of wide-band gap amorphous silicon based alloys**”, Journal Non-Cristalline Solids 266-269, 588-592 (2000).
- 10) S. Lazarouk, S. Katsouba, A. Tomlinson, S. Benedetti, *C. Mazzoleni*, V. Mulloni, G. Mariotto, and L. Pavesi “**Optical characterization of reverse biased porous silicon light emitting diode**” Materials Science and Engineering B 69-70, 114-117 (2000).
- 11) V. Mulloni, R. Chierchia, *C. Mazzoleni*, G. Pucker, L. Pavesi and P. Bellutti “**Porous silicon optical devices and Si/SiO₂ multilayers: recent results**” Philosophical Magazine B 80, 705 (2000).
- 12) M. Allegrini , F. Fuso, M. Labardi, L. Pardi, F. Sbrana, V. Mulloni, *C. Mazzoleni*, R. Chierchia, L.Pavesi “**Near Field Optical Investigations of Porous Silicon Samples**” Philosophical Magazine B 80, 611 (2000).
- 13) V. Mulloni, *C. Mazzoleni*, and L. Pavesi “**Elaboration, characterization and aging effects of Porous Silicon Microcavities formed on lightly p-type doped substrates**” Semiconductor Science and Technology 14, 1052-1059 (1999).
- 14) C. Duverger, M. Ferrari, *C. Mazzoleni*, M. Montagna, G. Pucker, and S. Turrell “**Optical spectroscopy of Pr³⁺ ions in sol-gel derived GeO₂-SiO₂ planar waveguides**” Journal of Non-Crystalline Solids 245 129-134 (1999).
- 15) L. Pavesi, *C. Mazzoleni*, R. Guardini, M. Cazzanelli, V.Pellegrini and A.Tredicucci “**Porous-silicon microcavities**”, Il Nuovo Cimento Vol.18 D, N.10, pp. 1213-1223, (1996).
- 16) L. Pavesi, R. Guardini, and *C. Mazzoleni* “**Porous silicon cavity light emitting diodes**”, Solid State Communications, Vol. 97, No. 12, pp. 1051-1053, (1996).
- 17) *C. Mazzoleni* and L. Pavesi “**Application to optical components of dielectric porous silicon multilayers**”, Applied Physics Letters 67 (20), pp. 2983-2985, (1995).
- 18) L. Pavesi, *C. Mazzoleni*, Alessandro Tredicucci, and Vittorio Pellegrini “**Controlled photon emission in porous silicon microcavities**”, Applied Physics Letters Vol. 67 (22), pp. 3280-3282, (1995).
- 19) D. Bisero, F. Comi, C. Nobili, R. Tonini, G. Ottaviani, *C. Mazzoleni*, L. Pavesi “**Visible photoluminescence from He-implanted silicon**”, Applied Physics Letters 67 (23), pp. 3447-3449, (1995).
- 20) V. Pellegrini, A. Tredicucci, *C. Mazzoleni*, and L. Pavesi “**Enhanced optical properties in porous silicon microcavities**”, Physical Review B Vol. 52, No. 20, R14 328-331, (1995).

Reports:

- 1) H. D. Kuhns, *C. Mazzoleni*, M.-C. O. Chang, J. C. Chow, G. P., V. Etyemezian, H. Moosmüller, P. W Barber, N. J. Nussbaum, S. K. K. Nathagoundenpalayam, S. Kohl, D. Nikolic, J. G. Watson “**Meridian School Bus Biodiesel Evaluation Study: Final Report**” Prepared for Community Planning Association of Southwest Idaho, Meridian, ID, April 2005.

- 2) J. G. Watson, W. Miller, H. Moosmüller, H. D. Kuhns, M.-C. O. Chang, N. J. Nussbaum, *C. Mazzoleni*, P. W. Barber, D. R. Cocker, M. R. Kemme “**Characterization of Off-Road Diesel Emissions of Criteria Pollutants**” Annual report prepared for the DoD Strategic Environmental Research and Development Program, December 2004.
- 3) H. D. Kuhns, P. W. Barber, R. E. Keislar, *C. Mazzoleni*, H. Moosmüller, D. Nikolic, N. F. Robinson, J. G. Watson “**Remote sensing of gaseous and particle emissions from onroad vehicles in Clark County, Nevada**” Prepared for the Clark County Department of Air Quality Management, Las Vegas, NV, September 2002.
- 4) R. E. Keislar, P. W. Barber, H. D. Kuhns, *C. Mazzoleni*, H. Moosmüller, N. F. Robinson, and J. Watson “**Measurement Of Diesel Particulate Emissions by UV Lidar Remote Sensing**” Prepared for the Coordinating Research Council, Alpharetta, GA, July 2002.

Recent Conference Contributions:

1. *C. Mazzoleni*, H. D. Kuhns, N. J. Nussbaum, H. Moosmüller, P. W. Barber, O. M. Chang, G. Parthasarathy, D. Nikolic, and J. G. Watson, «**Comparison of On-road, Fuel-based Emission Factors Measured with In-plume and Cross-plume systems**». Oral presentation at the 15th CRC meeting, San Diego, CA, April 3-6, 2005.
2. *H. D. Kuhns*, *C. Mazzoleni*, N. J. Nussbaum, H. Moosmüller, O. M. Chang, G. Parthasarathy, D. Nikolic, J. G. Watson, and J. Witt, «**Comparison of PM, NO, CO and HC Emissions from an In-use School Bus Fleet Using 20% Biodiesel and Winter Blend Fuel**». Poster presentation at the 15th CRC meeting, San Diego, CA, April 3-6, 2005.
3. *H. D. Kuhns*, J. G. Watson, H. Moosmüller, P. W. Barber, *C. Mazzoleni*, O. M. Chang, M.. Kemme, J. W. Miller, and D. R. Cocker, «**New Approches for Determining Emission Factors from Off-road Diesel Engines: SERDP Project CP-1336**». Oral presentation at the Partners in Environmental Technology Technical Symposium and Workshop, Washington, DC, November 30 - December 2, 2004.
4. *C. Mazzoleni*, H. Moosmüller, H. D. Kuhns, P. W. Barber, D. Nikolic, N. J. Nussbaum, O. M. Chang, R. E. Keislar, and J. G. Watson, «**On-road Particulate Matter Emission Factors from Vehicles by Ultraviolet Backscattering and Extinction Measurements**». Oral presentation at the Visibility Specialty Conference Air and Waste Management Association, Asheville, NC, October 26-29, 2004.
5. *C. Mazzoleni*, H. D. Kuhns, H. Moosmüller, N. J. Nussbaum, O. Chang, D Nikolic, P. W. Barber, R. E. Keislar, and J. G. Watson, «**On-Road Measurement of Automotive PM Emissions with In-plume and Cross-Plume Systems** ». Oral presentation at the 23nd Annual AAAR Conference, Atlanta, GA, October 4-8, 2004.
6. *H. D. Kuhns*, *C. Mazzoleni*, H. Moosmüller, N. J. Nussbaum, O. Chang, J. Chow, P. W. Barber, and J. G. Watson, «**Measurement of In-use Vehicle Particulate Matter Exhaust Using Extractive In-plume Monitoring**». Poster presentation at the 23nd Annual AAAR Conference, Atlanta, GA, October 4-8, 2004.
7. *H. Moosmüller*, *C. Mazzoleni*, P. W. Barber, H. D. Kuhns, R. E. Keislar, and J. G. Watson, «**An Ultraviolet Lidar And Transmissometer For The On-Road Meas-**

- urement Of Automotive Particle Emissions».** Poster presentation at the 23nd Annual AAAR Conference, Atlanta, GA, October 4-8, 2004.
8. ***C.Mazzoleni*, «Ultraviolet Lidar and Transmissometer for On-road Measurement of Particulate Mater Emited by Vehicles».** Invited speaker at the WRELI (Watt Road Environmental Laboratory Initiative) workshop, Knoxville, TN July 28-29, 2004.
9. ***H. D. Kuhns, C. Mazzoleni*, , H. Moosmüller, D. Nikolic, R. E. Keislar, P. W. Barber, V. Etyemezian, and J. G. Watson, «Spatial Analysis of Remotely Sensed Emissions from Light Duty Gasoline Vehicles in Clark County, Nevada».** Oral presentation at the 97th Annual Conference of the Air and Wastr Management Association, Indianapolis, IN, June 22-25, 2004.
- 10.***C. Mazzoleni*, H. D. Kuhns, H. Moosmüller, R. E. Keislar, P. W. Barber, D. Nikolic, N. F. Robinson, and J. G. Watson, «On-Road Remote Sensing Measurement of Automotive Particulate and Gaseous Emissions in Las Vegas, NV».** Poster presentation at the 22nd Annual AAAR Conference, Anaheim, CA, October 20-24, 2003.
- 11.***C. Mazzoleni*, H. Moosmüller, P. W. Barber, H. D. Kuhns, R. E. Keislar, and J. G. Watson, «Ultraviolet Lidar and Transmissometer for the On-Road Measurement of Automotive Particle Emission Factors».** Oral presentation at the 22nd Annual AAAR Conference, Anaheim, CA, October 20-24, 2003.
- 12.***C. Mazzoleni*, H. D. Kuhns, H. Moosmüller, R. E. Keislar, P. W. Barber, D. Nikolic, N. F. Robinson, and J. G. Watson, «Automotive Particulate Matter and Gaseous Emissions Factors from On-Road Measurements in Las Vegas, NV».** Oral presentation at the NARSTO Emission Inventory Workshop, Austin, TX, October 14-17, 2003.
- 13.***H. Moosmüller, C. Mazzoleni*, P. W. Barber, H. D. Kuhns, R. E. Keislar, and J. G. Watson, «On-Road Measurement of Automotive Particle Emissions Factors by Ultraviolet Lidar and Transmissometer».** Poster presentation at the NARSTO Emission Inventory Workshop, Austin, TX, October 14-17, 2003.
- 14.***C. Mazzoleni*, R. E. Keislar, H. D. Kuhns, H. Moosmüller, P. W. Barber, D. Nikolic, N. F. Robinson, and J. G. Watson, «On-Road Optical Remote Sensing of Particulate Matter and Gaseous Emissions from Vehicles in the Las Vegas Area».** Oral presentation at the 96th Air and Waste Management Association Meeting, San Diego, CA, June 23-26, 2003.
- 15.***C. Mazzoleni*, H. Moosmüller, R. E. Keislar, P. W. Barber, H. D. Khuns, and J. G. Watson, «A Remote Sensor for Vehicle Exhaust Particulate Matter».** Poster presentation at the PM AAAR meeting, Pittsburgh, PA, March 31 - April 4, 2003.
- 16.***C. Mazzoleni*, H. D. Khuns, H. Moosmüller, R. E. Keislar, P. W. Barber, and J. G. Watson, «On Road UV Lidar and Transmissometer PM Remote Sensor».** Poster presentation at the OCEC international Workshop, Durango, CO, March 3-5, 2003.
- 17.***C. Mazzoleni*, R. Keislar, H. Moosmüller, A. Yimer, H. Kuhns, V. Etyemezian, J. Watson, and E. Fujita, «Interpretation and processing of LIDAR returns from on-road particulate matter emission».** Oral communication at the 11th CRC On-Road Vehicle Emissions Workshop, March 27, 2001.